

## Patent Claims

1. A system for frequency correction in a reception apparatus, comprising:
  - 5 a detection device adapted to detect a frequency discrepancy in received signals;
  - a first control system configured to correct a frequency supplied to a mixer stage on the basis of the detected frequency discrepancy; and
  - 10 a second control system configured to provide digital correction of the detected frequency discrepancy in accordance with an algorithm.
2. The system of Claim 1, wherein the algorithm  
15 comprises a CORDIC algorithm.
3. The system of Claim 1, wherein only one of the two control systems is active at a time.
- 20 4. The system of Claim 3, wherein the first control system is active in a normal mode, while the second control system is active during predetermined operating states.
- 25 5. The system of Claim 4, wherein the reception apparatus comprises a mobile station in a mobile communication system, wherein the mobile station is configured such that the first control system is active during a reception mode with one base station, and the  
30 second control system is active when a transmission or reception mode is being changed over to another base station.
6. The system of claim 1, wherein the first  
35 control system comprises a PLL control loop having a first voltage-controlled oscillator whose output frequency is supplied to the mixer stage.

7. The system of Claim 6, wherein the first control system further comprises a second voltage-controlled oscillator to which a control signal  
5 produced based on the detection of the frequency discrepancy is supplied and whose output frequency is an input frequency for the PLL control loop.

8. The system of Claim 7, wherein the first  
10 control system further comprises a low-pass filter upstream of the second voltage-controlled oscillator.

9. The system of Claim 1, wherein the first control system comprises means for detecting the  
15 frequency discrepancy as part of a RAKE receiver operable to produce a frequency discrepancy signal at its output.

10. The system of Claim 9, wherein the first  
20 control system comprises means for producing a control voltage to which the frequency discrepancy signal is supplied and supplying the control voltage to the second voltage-controlled oscillator.

25 11. The system of Claim 1, wherein the second control system comprises a CORDIC computation unit within a reception path that is controlled by a control signal.

30 12. The system of Claim 11, wherein the first control system is deactivated at the same time as the control signal is output.

13. A method for frequency correction in a  
35 reception apparatus, comprising:

detecting, in a first operating state, a frequency discrepancy in received signals;

supplying, in the first operating state, a corrected frequency to a mixer stage based on the detected discrepancy;

detecting, in a second operating state, a  
5 frequency discrepancy in the received signals; and  
performing, in the second operating state,  
digital frequency correction based on an algorithm.

14. The method of Claim 13, wherein the algorithm  
10 comprises a CORDIC algorithm.

15. The method of Claim 13, wherein the apparatus comprises a mobile station in a mobile communication system, and wherein the first operating state comprises  
15 a normal transmission or reception mode with one base station, and the second operating state comprises a state in which the transmission or reception mode is changed over to another base station.

20 16. The method of Claim 13, wherein the first operating state involves the detection of the frequency discrepancy being taken as a basis for producing a frequency discrepancy signal, a control voltage derived from the frequency discrepancy signal being supplied to  
25 a voltage-controlled oscillator whose output frequency is supplied to a PLL control loop, and the latter's output frequency being supplied to the mixer stage.

17. The method of Claim 16, wherein, during the  
30 second operating state, the output frequency which is output by the voltage-controlled oscillator at the time of the changeover from the first to the second operating state is maintained.